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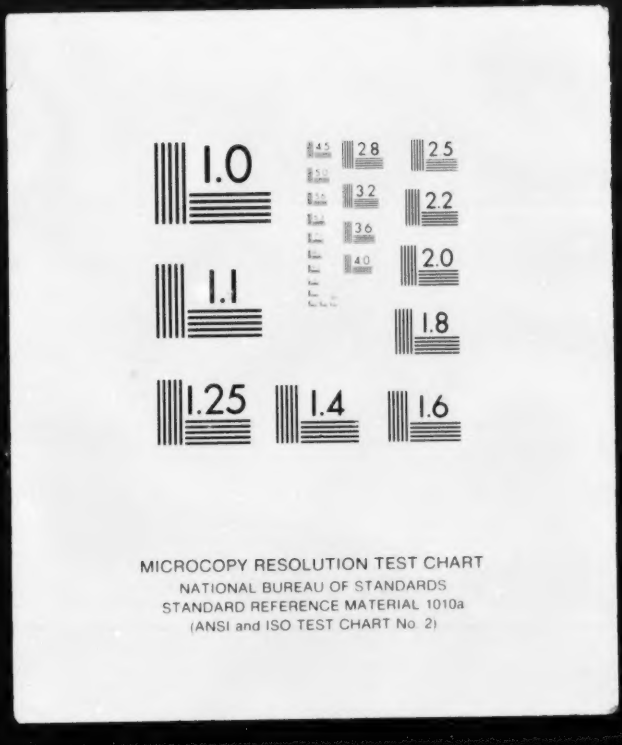
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ABSTRACT

A prototype of a computer-aided manpower management and career progression system, the Officer Career Information and Planning System (OCIPS), has been developed to a point at which costs and benefits for its implementation can be estimated. Considering the goals of the Officer Personnel Management System and problems of the Army Military Personnel Center (MILPERCEN) in pursuing those goals, the benefits likely to accrue from the implementation of OCIPS are described. A plan for evolving OCIPS from a prototype to an operational system is devised, and its costs are estimated. Various installation strategies, including various equipment alternatives, are compared. Estimates are also made for the costs of disseminating career information without computers. (KC)

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Research Report 1256

COST-BENEFIT ANALYSIS OF THE OFFICER CAREER INFORMATION AND PLANNING SYSTEM

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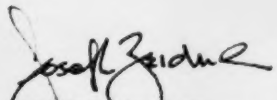
FOREWORD

Part of the research of the Personnel Utilization Technical Area of the Army Research Institute for the Behavioral and Social Sciences (ARI) supports effective career management for Army officers. One result of this research has been the design and field tryout of an experimental computer-based Officer Career Information and Planning System (OCIPS). This report provides a cost-benefit analysis of OCIPS, as judged by an interdisciplinary team of experts in the fields of career counseling, in computer applications in psychology and education, and in information systems.

Research in career counseling and career management is conducted jointly as an in-house ARI effort and through contracts with organizations selected for their specialized expertise. This report, representing the best judgment of an interdisciplinary team of experts led by professors at Teachers College, Columbia University, was produced under Contract DAHC 19-76-C-0030. The research effort, directed by Bertha H. Cory and conducted under Army Project 2Q162717A766, Task C, Career Progression Systems, FY 1978 Work Program, supports Human Research Needs 75-43, and 76-46, "Officer Career Counseling," from the Deputy Chief of Staff for Personnel (DCSPER).

The project is of interest to DCSPER, to the Army Military Personnel Center (MILPERCEN), and to the Army Training and Doctrine Command (TRADOC). LTC Ralph G. Burr, Jr., MAJ Ronald E. Gornto, MAJ Richard A. Platt, MAJ Michael J. Scannell, MAJ Richard F. Timmons, and CPT Steven Westbrook of MILPERCEN provided essential information and interpretations. Earlier research in this area was done in ARI's Career Development and Soldier Productivity Technical Area under the direction of Cecil D. Johnson.



JOSEPH ZEIDNER
Technical Director

COST-BENEFIT ANALYSIS OF THE OFFICER CAREER INFORMATION AND PLANNING SYSTEM

BRIEF

Requirement:

To project costs and benefits of a fully operational version of the research-based system for manpower management and career projection called the Officer Career Information and Planning System (OCIPS). OCIPS was designed to aid the U.S. Army Military Personnel Center (MILPERCEN) in the implementation of the Officer Personnel Management System (OPMS).

Procedure:

An analysis of the objectives of OPMS, as described in DA Pamphlet 600-3, prescribed career and manpower management processes and an array of obligations and opportunities for officers and for career managers. A survey of career management procedures used by MILPERCEN identified certain problems that OPMS implementation poses. A description of how OCIPS might assist MILPERCEN led to a consideration of the eventual costs of a fully adopted system. Assumptions about the parameters of a fully operational version of OCIPS were generated in order to estimate costs.

Product:

The resulting estimates provide information on the following:

1. Probable benefits to be derived,
2. Personnel costs for evolving the prototype,
3. Configuration of a fully implemented system,
4. General and specific system requirements,
5. Relative costs of four possible implementation strategies,
6. Advantages and disadvantages of the four strategies, and
7. Costs of disseminating career information without the use of a computer.

COST-BENEFIT ANALYSIS OF THE OFFICER CAREER INFORMATION AND PLANNING SYSTEM

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COST-BENEFIT ANALYSIS OF THE OFFICER CAREER INFORMATION AND PLANNING SYSTEM

INTRODUCTION

The implementation of the Officer Personnel Management System (OPMS) has presented the Army with a challenge. As one response to this challenge, exploratory research has led to the development of a prototype system called the Officer Career Information and Planning System (OCIPS) (Phillips, Cairo, Myers, Ryan, Hoffer, & Croes-Silverman, 1980). OCIPS is envisioned as part of a large, research-based system for manpower management and career progression for Army officers (Cory, Medland, & Uhlaner, 1977). The prototype of OCIPS represents only a portion of the eventual manpower management and career progression system; yet development efforts have proceeded to the point that it is possible to visualize the components and the structure of the larger, more comprehensive system.

Decisions about the feasibility and effectiveness of the comprehensive system must obviously be based on research evidence to be generated from trials of a system that is several years from completion. The effort described here was designed to use current knowledge as a basis for a cost-benefit analysis to permit decisions about continued developmental research.

This report includes a brief description of OPMS, an analysis of DA Pamphlet 600-3, and an attempt to understand some of the issues faced by assignment officers and career managers working in the Military Personnel Center (MILPERCEN). A second section describes what OCIPS could become as a result of further developmental efforts, identifies the benefits likely to accrue from an operational implementation of OCIPS, and estimates the various categories of the cost of continued development, implementation, and maintenance.

THE OFFICER PERSONNEL MANAGEMENT SYSTEM (OPMS)

The objectives of OPMS are well understood and explicitly stated (DA 600-3, p. 1-1; underlining added):

1. To develop officers in the right numbers and with the right skills to satisfy Army requirements, <u>taking maximum advantage of the inherent abilities, aptitudes, and interests of the individual officer</u>.

2. To assign officers according to the Army's needs <u>and the individual's competence and desires</u>.

3. <u>To improve motivation and professional satisfaction of the officer corps</u>.

Such bold declarations of intent leave little doubt that the Army aspires to personnel policies which are informed by the best principles of organization, including clarity of mission and awareness of how best to develop and manage human resources. The understanding of OPMS as it is formally described and as it is implemented by the Army--especially by the assignment officers and career managers at MILPERCEN--leads one to infer a small set of basic values, goals, and assumptions, including these:

1. The efficiency of the Army and the career success and satisfaction of individual officers are compatible.

2. Officers must pursue their individual careers in an enlightened manner.

3. MILPERCEN must implement OPMS with careful regard for both the needs of an efficient Army and the needs and aspirations of individual officers.

Most large, complex organizations have dealt with the compelling reality that growth and development of individuals within a system are consonant with and essential to successful functioning of that system. The Army is clearly among this enlightened majority.

DA Pamphlet 600-3 is accurately recognized as an ideal and a general description of OPMS, and it also represents the best available source of information about (a) the intent of the Army in matters of officers' careers and (b) specific directions to individual officers and to assignment officers and career managers at MILPERCEN. With ample recognition that expressed values must necessarily depart from revealed preferences when complex social systems are being described, an analysis of the prescriptive messages of DA 600-3 was undertaken.

The analysis revealed that in many cases the prescriptive messages could be classified according to attendant sets of specific obligations and opportunities. Table 1 details these processes and obligations/opportunities.

As Table 1 makes clear, enlightened behavior on the part of individual officers requires a high degree of performance and a dedication to the development of competence. These requirements describe officers' relationships to themselves and to their line associates: their peers, their commanders, and so on. In addition, however, enlightened career behavior requires knowing oneself, making plans for one's future, communicating those plans to MILPERCEN, and implementing those plans within the constraints of the Army (i.e., the opportunity system).

For assignment officers and career managers at MILPERCEN, the tasks assigned by DA 600-3 are both more complex and less well defined. The problem of combining the distribution function (having the right number of properly qualified officers ready when they are needed) with the guidance function (helping officers grow and develop) creates stresses that make adequate role behavior within MILPERCEN difficult to achieve. The problem of providing valuable and realistic counseling is complicated by the need to balance distribution with guidance and by various uncertainties that

Table 1

Career and Management Processes and Obligations/
Opportunities Prescribed by DA 600-3

Processes	Obligations/Opportunities
Enlightened Officer Behavior:	
1. Perform all assignments well	1. -
2. Gain and maintain proficiency in two occupational specialties	2. -
3. Understand Army career opportunities	3. Consult with MILPERCEN about educational and assignment opportunities
4. Understand one's own qualifications, needs, and aspirations	4. -
5. Make plans for one's own development and implement those plans	5a. Complete Officers Professional Development Plan (DA 4190-R) b. Project objectives through the next grade c. Submit DA 4190-R at specified times d. Seek assignments that implement plans e. Request change in primary or alternate specialty when appropriate f. Educate self through nonresident instruction programs
6. Communicate one's plans to MILPERCEN	6a. Inform assignment officers of one's aspirations b. Complete DA 4190-R c. Express preferences for assignments and for alternate specialties at specified times

Table 1 (Continued)

Processes	Obligations/Opportunities
	d. Audit Officer Record Brief and Official Military Personnel Records File periodically
Assignment Officer & Career Manager Behavior:	
1. Participate in developing right number of officers with right skills to satisfy Army requirements	1a. Encourage competent officers to make the Army a career
	b. Designate alternate specialties after 8 years
	c. Facilitate captains' attendance to Advance Course; majors' to CGSC; lieutenant colonels to SSC or alternatives; other educational opportunities
2. Assign officers according to Army needs and individuals' competencies and desires	2a. Make assignments to promote use of training and leadership skills
	b. Use officers' preference statements to consider individual aspirations
	c. Assign to maximize development of primary specialty
	d. Facilitate captains' becoming company commanders; majors' and lieutenant colonels' getting positions of increasing challenge and responsibility
3. Provide valuable and realistic counseling	3a. Advise about things to be considered in requesting training and assignment
	b. Assist individual officers at all times

inhibit and sometimes preclude realistic communication with individual officers. The following section attempts to characterize the matrix of problems and possibilities posed for MILPERCEN by OPMS.

MILPERCEN

In theory it should be possible to combine the manpower distribution function with the individual guidance function within an organization that controls its opportunities; however, the realities of the Army as an organization pose certain specific challenges to MILPERCEN. To meet these challenges in an ideal way, MILPERCEN would require the following capacities:

1. Accurate knowledge of Army requirements for several years in the future.

2. Assurance of a pattern of officer requirements, by specialty and by grade, which fits the patterns of officer progression and attrition.

3. Ability to influence input to the officer corps, maintaining a steady stream of newly commissioned junior officers so that the supply was sufficient to meet current and projected needs.

4. Accurate and timely knowledge of the qualifications, needs, and aspirations of individual officers.

In fact, these capacities do not exist at MILPERCEN. Accurate foreknowledge of requirements is impossible because the Army's needs for officer personnel are dynamic. Both total size of the officer corps and demands for the various specialties vary from year to year. Most of this variation is attributable to exogenous factors over which MILPERCEN has little control (e.g., budgets and force strengths determined by Congress). Many external decisions are made in ways that preclude sufficient advance notice at MILPERCEN.

The pattern of needs often does not fit well with patterns of officer progression and attrition. In some specialties there is a large requirement for officers at the lower grades but a disproportionately smaller requirement at the upper grades. In other specialties, the opposite pattern exists. In still others, there is a bulge in the number of officers required at the middle grades. Any of these patterns can complicate MILPERCEN's management task and make it difficult to achieve an orderly progression from assignment to assignment within the officer's designated specialties.

Another impediment to the ideal functioning of MILPERCEN is the highly unstable rate at which new officers are taken into the Army. Since the overall size of the officer corps must vary from time to time, the simplest management technique for changing the overall size is to regulate the intake of new officers. Unfortunately, a smaller officer corps requires fewer officers at every grade, whereas the management technique used affects only the number of entry-grade officers. This situation causes serious troughs and swells in the number of officers progressing through the system, and it may cause major mismatches between the number of officers of a particular grade and specialty required and the number available.

Finally, for MILPERCEN to be aware of the qualifications, needs, and aspirations of all the officers for which it has responsibility, it would be necessary for all officers to provide MILPERCEN with such information. The existing pattern of information flow from individual officers to MILPERCEN is far from ideal. As examples, assignment officers and career managers have provided the following estimates:

Company-grade officers familiar with principles of OPMS.....50%

Company-grade officers who express serious concern with their career futures.....20%-30%

Company-grade officers who submit Professional Development Planning Worksheet DA-6190-R..... 1%

Although larger percentages of company-grade officers consult about their next assignments (75%-80%), the relatively inadequate communication from individual officers to MILPERCEN about their career-relevant attributes is another serious handicap to the implementation of OPMS. In the absence of individual information about the longer term, career managers and assignment officers are frequently compelled to focus on the short-term issue, an officer's next assignment.

Inadequate communication also presents a problem for the designation of alternate specialties. Over 90% of the eligible officers express a preference for an alternate specialty. MILPERCEN assignment officers report, however, that the majority of these officers request a specialty for which they are either not eligible or not well suited. In the larger branches, 60% of the officers do so for their first choice. Overall, the proportion of officers requesting an inappropriate specialty (first, second, or third choice) may be larger. In fact, given MILPERCEN's pressures and constraints, the result is likely to be a larger number of officers being designated to a specialty not of their choice.

All the problems mentioned above are compounded by the Army's practice of managing officers by year groups. Needs differ from specialty to specialty; yet the basic promotion decision, which determines eligibility for many assignments, is made without regard to specialty. This practice clearly makes it more difficult to satisfy individual preferences and Army needs simultaneously. Last year, specialty shortage was used as a criterion in determining promotions to colonel; but, so far, this remains the exception to the usual procedure.

Given this less-than-ideal situation, MILPERCEN has developed certain coping mechanisms. Foremost among these is the practice used, by assignment officers, of devoting most of their time to the distribution function--meeting Army requirements. The assignment officers make it clear that filling positions to meet Army needs is viewed as their primary task; in fact, they spend at least 90% of their time doing just that. Thus, career counseling and attempting to combine individual and organizational needs are neglected in service of filling requirements. This tactic is not surprising. In a tightly constrained environment, the assignment officers are better able to cope by relaxing some of the constraints.

MILPERCEN has developed other mechanisms to help deal with this environment, including computer-based planning models to aid in assigning available personnel to meet future expected needs. MILPERCEN policy and planning personnel report the heavy use of one of these models, the Assignment Simulation Model, in conjunction with two reports--DAPC 156 and DAPC 131--as key control tools. However, certain problems are attendant to these models and their use. First, the models are based on "steady-state" assumptions about total "in-strength" and requirements by specialty, assumptions which are not met in reality. Second, the models consider only the skills characteristics of available officers and the needs of the Army. Considerations of individual preferences must be introduced after the models have produced their results. Finally, these tools are being used only by policy-level and planning personnel, not by officers with responsibility to make assignments. Hence, the models currently serve as scorecards or benchmarks, not as tools to guide and direct operational decisionmaking.

One practice, recently adopted by MILPERCEN, goes beyond the others described above. It is the issuing of a Specialty Over/Under Alignment Message every 6 months. Rather than simply reporting on the outcome of the assignment process or cutting off certain environmental pressures, this device is intended to shape the environment by providing officers with realistic data relevant to their career decisions. This may be a significant step, as it will tend to produce an officer corps whose aspirations are more in line with Army needs.

The approaches MILPERCEN officers have taken to deal with their environment are functional; they allow them to perform at least certain aspects of their assigned roles. However, there are dysfunctional consequences as well. Perhaps the best evidence is that career management and assignment officers are aware that officers in the field view MILPERCEN with suspicion. They are never certain they are receiving a straight story. Often, two officers in similar situations will receive considerably different stories. Van Nostrand, Wyatt, and Hickey (1978) have recently provided empirical evidence to support this assertion.

It appears that a major part of the problem is a lack of thorough, open communication and of understanding of the system. Most officers in the field probably do not fully understand the Army policies that affect their assignments. That is, they do not understand the impact of managing by year groups or of unusual requirements patterns from grade to grade in a particular specialty. However, as suggested before, both these factors have major impacts on officer assignments.

Simply providing officers with an understanding of all the factors involved and of how they interact could help MILPERCEN to better fulfill its multiple roles. With this understanding of the multiple, interacting factors, an officer could assess his own possibilities more realistically. This, in turn, should lead to more realistic career plans, plans which the assignment officers and career managers should be better able to help the individual implement. Providing these data to officers in the field is something assignment officers (or career development officers) cannot readily be expected to do, as it would be time consuming, repetitive, and boring. However, this type of task is ideally suited to a computer-based system, and it is one way in which a system like OCIPS could support the work of MILPERCEN.

Another problem MILPERCEN faces is the apparent need for assignment officers to subordinate all other personnel management objectives to that of filling positions that need to be filled. This practice is at least partly due to a lack of information available to and management tools in use by assignment officers. Making career information more accessible to officers in the field would, indirectly, improve the data available to assignment officers. But more help could be given, and a computer-based system could play a significant role.

At present, assignment officers are effectively restricted by the amount of data they can process manually at one time. This seriously limits the number of officers and positions they can consider simultaneously. Given relatively short deadlines and a tightly constrained environment, the result is probably a large number of "local optimizations," which are in aggregate inferior to many other potential solutions. By providing assignment officers with the support of a computer-based system, the scope of the problems they deal with could be expanded--that is, they could simultaneously consider a larger number of officers and positions. The result would likely be a solution superior to the current one.

OCIPS

The development of OCIPS is one response in the attempt to ease the constraints under which MILPERCEN operates and to promote the likelihood of enlightened officer behavior. Described here are the objectives, the design, and the anticipated benefits of a research-based system for manpower management and career progression.

Objectives

Making use of knowledge of career planning, Army career progression, and existing technology in computer science, OCIPS is intended to assist in the task of professional development and career management of company-grade Army officers. In more specific terms, OCIPS is designed to meet the following objectives in three major target areas:

- Officer behavior: to increase understanding of career opportunities, to increase understanding of officer's own qualifications, to facilitate the development and implementation of decisionmaking skills and career plans;

- Management operations: to develop the right number of officers with skills appropriate to Army needs, to facilitate assignment of officers according to both Army needs and individual officers' needs; to provide realistic and valuable counseling and guidance for officers; and

- OPMS policy: to implement OPMS policy and objectives as outlined in DA Pamphlet 600-3.

System Design

In its fully developed form, OCIPS is seen as including three major components. The first is an assignment system (Fields, 1977a, 1977b) to be used as a management technique by assignment officers and, secondarily, by career managers at MILPERCEN. The second component consists of various data bases that contain individual and aggregate information about the career and career-related issues of Army officers. The third component consists of a series of interactive dialogs designed for the purpose of query, information retrieval, instruction, and facilitation of individual development.

Assignment System. The Army faces several problems in its efforts to improve the professional development and career management of officers (Macpherson, Eastman, & Yates, 1978; Phillips et al., 1980). First, the Army is a highly complex organization with a wide variety of career alternatives and opportunities. Second, at present there is no centralized source of up-to-date career information easily accessible to both management personnel and officers. Third, the needs and opportunities within the Army are dynamic rather than static, and therefore career-relevant information is constantly changing. Finally, officer assignment in the Army is all too often viewed as unsystematic and frequently capricious. These problems have resulted in inefficient use of manpower resources and increased skepticism about the officer's ability to affect his or her own career. The development of a computer-based system for assigning officers more efficiently and equitably represents one effort to rectify some of these problems.

The Assignment System of OCIPS has investigated the utility of this method for captains in two career branches, Infantry and Quartermaster. Assignment policies and practices of the career branch were quantified and background information was retrieved from officer tapes in order to develop job-utility scores reflecting suitability for types of assignments. This was followed by the development of assignment algorithms, which were implemented by the computer. The computer-based assignments were evaluated by comparing them with actual assignments and by examining ratings of acceptability of the computer placements provided by experienced assignment officers. The results of the studies, which showed that assignments made by the computer agreed well with actual assignments and were judged suitable by branch personnel, supported the feasibility of such a computer-based assignment system.

The implementation of a fully operational assignment system for all branches would allow assignment officers to consider a large number of officers and available placements rapidly and simultaneously and to assign officers more objectively and equitably. Computer-based assignments would also increase the probability that all relevant variables be considered in assignment.

Data Bases. All officers express a strong desire to know the current facts about Army careers, and many officers are suspicious of facts they get from their career managers and assignment officers. Furthermore, their access to career facts is limited by their ability to visit MILPERCEN (10% of company-grade officers do) or to call or write to their MILPERCEN contact (70% do). However, an impressive array of career facts is stored at MILPERCEN, and the translation of those facts into OCIPS data bases is one method of increasing the availability of and access to desired career information.

The Alternate Specialties submodule of the career-planning portion of OCIPS is one example of possible data base translations. The module consists of interactive dialogue and retrieval strategies for accessing data about the alternate specialties assigned to more than 12,000 officers. Possibilities for being assigned a given alternate specialty can be estimated from an individual officer's civilian education, primary specialty, military education, and duty MOS. Furthermore, the influence of expressed preferences for an alternate specialty can be assessed.

A fully developed version of OCIPS could include data bases on such subjects as similarities and differences of assignments, career-enhancing values of various assignments, overaligned and underaligned specialties, and projected opportunities for command assignments and promotion possibilities (Cory, Medland, & Uhlaner, 1977). Information about assignment locations, military education opportunities, and separation from military service could also be coordinated and accessed through the use of data bases.

Interactive Dialogues. Recognizing that career planning requires more than information about the opportunity structure, OCIPS includes several interactive dialogue modules designed to teach various career planning concepts and to enhance career-relevant competencies. The specific concepts used in two of these modules are those which emerged from data analysis of Super's (1957) longitudinal study of career development. These concepts, which represent those notions that research has shown to be essential for consideration in career planning, are inevitability of choice, choice as an implementation of values, contingencies and discontinuities, clarity and tentativeness, and life stages.

Currently, four interactive dialogue units constitute the long-term career planning portion of OCIPS. The entry unit, entitled FORESIGHT, introduces the idea that individuals can influence their careers if they know what they want and know how the system works. The module briefly describes the career concepts and integrates them by means of a sample career path in which an officer makes career choices and confronts situational changes at the different stages of his or her career. Alternate entry modules are envisioned to include those designed particularly for use by MILPERCEN personnel, commanding officers, personnel officers at assignment posts, and officers who have had prior exposure to OCIPS.

The importance of knowing how the system works is further emphasized in OVERVIEW. This module provides the user with information about the Army's overall plan for officer career progression and highlights factors that influence the ways in which an officer's career develops (e.g., changes in needs, goals, and objectives of the Army; military and technological changes; timing of career decisions; and military education). The goal of this module is to enable officers to incorporate the complex officer career progression system into their planning. An abbreviated module, called CAPTAIN'S INTRODUCTION, combines FORESIGHT and OVERVIEW for those officers who have already acquired much of this information.

Effective career planning also requires that the planner have a clear understanding of what he or she wants. It is important, therefore, that the system provide officers with the opportunity to survey their skills and interests and to learn how to use this information in planning their careers.

This issue is addressed by the SELF-ASSESSMENT module. Selecting from a list of Army career-relevant skills and values, the officer is able to create a self-profile and is shown how to integrate this knowledge in an individual career plan. The potential utility of this assessment function, beyond what has already been developed, is considerable. Several recent studies have analyzed positions within the Army in terms of duty modules, i.e., job functions and skill requirements (Korotkin, Hadley, Davis, & Marsh, 1976). These and similar efforts can be combined with the existing model to determine which specific skills and values are most consistent with which jobs, positions, or assignments.

Learning how to implement career aspirations is an obvious and essential aspect of planning. Consequently, OCIPS also includes a CAREER STRATEGIES module that assists the officer, by means of on- and off-line exercises, in setting long-term goals, and in translating goals into action plans for achieving immediate objectives. The module incorporates the major facets of an officer's career (military specialties, education and training, skills, duty performance, rank, contribution, assignments, family, and values) and combines the previously learned career planning competencies with strategies for goal achievement.

A fully developed long-term career planning unit would also include a monitoring function permitting users to retrieve earlier interactions with the computer, update their career progress, and determine the extent to which earlier career goals and objectives have been met. Since assessing career progress is important in view of the tentative nature of career planning, a monitoring function designed for use with OCIPS would provide a systematic way of continually integrating new information about the Army career progression system and the officer's ongoing experience.

The components described here (dialogue units, data bases, and assignment system) represent efforts to address some of the problems encountered in the implementation of OPMS. Designed primarily for a target population of company-grade officers, OCIPS is recommended for use particularly at the Army Education Center, MILPERCEN, and sites concerned with continued OCIPS maintenance and development.

Benefits

The capabilities of OCIPS, as it exists and as it is envisioned, provide numerous benefits, both in terms of officer behavior and management operations and objectives. For officers, these benefits are as follows:

- Consistent, accurate, stable, rapid, and objective information about the Army career progression system;
- Immediate access to and awareness of changes in the Army's career opportunity structure;
- Access to information as needed, without the necessity of contacting MILPERCEN directly;

- Exploration of assignment and career alternatives on the basis of previous officer career paths;
- Enhanced decisionmaking skills;
- More realistic career planning and choices;
- Enhanced sense of agency (confidence in the ability to affect one's future);
- Increased motivation; and
- Increased career satisfaction.

For Army management, the benefits are these:

- A better informed officer population;
- A reduction in time spent disseminating and reiterating information, resulting in a more efficient use of time;
- Ready access to data on the entire officer population; and
- A better match between officer interests and competencies and Army resources and requirements.

ESTIMATE OF COSTS: DEVELOPMENT

In an attempt to estimate the costs of an operational version of OCIPS, including an assignment system, it was necessary to create a development plan for moving from the current status to full operation. The plan has two main parts: evolution of the prototype system and design of and preparation for procurement of the evolved system.

Evolution of the Prototype System

At present, the prototype of OCIPS exists in various degrees of development. Table 2 illustrates this variety. The Career Strategies module is designed to illustrate how this system would work if the necessary data bases were available. Alternate Specialties is the only such data base in existence. The Assignment System has not been designed, although two studies (Fields, 1977a, 1977b) have been conducted to demonstrate its feasibility.

The first step in the evolution of the current system would be to work toward a complete prototype of the career progression part of OCIPS. This would involve programing the CAPTAIN'S INTRODUCTION, SELF-ASSESSMENT, and CAREER STRATEGIES modules on the current UNIVAC 1108 test system. The second step would be to conduct a field test of the entire prototype for the purpose of assessing its feasibility and credibility.

Table 2

Degrees of Development of Parts of OCIPS

Part	Designed	Programed	Tested
Introduction for lieutenants (FORESIGHT)	Yes	Yes	Yes
Introduction for captains (CAPT. INTRO)	Yes	No	No
Overview of career system (OVERVIEW)	Yes	Yes	Yes
Self-assessment techniques (SELF-ASSESSMENT)	Yes	No	No
Long-term planning (CAREER STRATEGIES)	Yes	No	No
Data base (ALTERNATE SPECIALTY)	Yes	Yes	Yes
Assignment system (ASSIGN. ALGORITHM)	No	No	No

While these activities were in progress, other steps could be initiated. Additional data bases could be assembled and designed for incorporation into the system. (It is assumed that comprehensive field testing of these additions would not be necessary.) The assignment system could also be designed at this time.

Table 3 contains the estimated personnel costs for each of these steps and the total estimated personnel costs for the evolution of the prototype system.

Creation of the Evolved System

When all parts were designed and the prototype system had been field tested, the next series of activities could begin. These activities would include modification of the theory on which the original design was based and accommodations to the changing realities of the Army; redesign and improvement of the dialogues; and creation of specifications for the operating system, based on evaluation of the several implementation alternatives.

The theory on which OCIPS is based holds that the existence of timely, accurate career information in a form readily accessible to officers will lead to more enlightened career behavior on their part and, subsequently, to a closer approximation of the goals of OPMS. The theory assumes that when officers have been informed about the career realities of the Army and have been stimulated to a higher degree of self-knowledge, their behavior will change in the direction of more activity and higher level relationships with assignment officers and career managers. To accomplish these goals, the current theory prescribes a series of computer-generated exercises that include learning about planning, practicing planning, and using available data to structure and implement plans. The various parts of OCIPS were designed to stimulate hypothetically optimal amounts of these activities.

Table 3

Estimated Personnel Cost for Evolution of OCIPS Prototype

Activity	Personnel (time)[a]	Cost
1. Installation of SELF-ASSESSMENT, CAREER STRATEGIES, CAPTAIN'S INTRODUCTION to test system	1a. ARI professional (6 M/M @ $4,584)	$27,500
	b. Consultant (15 M/D @ $150)	2,250
2. Field test of prototype OCIPS	2a. ARI professional (1 M/Y @ $55,000)	55,000
	b. Contractors (1.5 M/Y @ $65,000)	97,500
3. Development of 4 data files comparable to ALTERNATE SPECIALTIES	3a. ARI professional (20 M/M)	91,680
	b. Contractors (6 M/M)	32,500
	c. MILPERCEN (6 M/M)	27,500
4. Incorporation of assignment algorithm	4a. ARI (1 M/Y)	55,000
	b. MILPERCEN (6 M/M)	27,500
Total		$416,430

[a] M/M = man/month
M/D = man/day
M/Y = man/year

The following questions are among those to be answered by the field test:

1. Do the dialogues stimulate the activities they are intended to stimulate?

2. Is the system sufficiently varied for the many circumstances of officers?

3. Is the system designed in the most useful size and shape?

Answers to these and other questions would form the basis for modifications of the theory and subsequent changes in the dialogues. In addition, reason would suggest that certain policies, procedures, and prescriptions of OPMS will change as its implementation proceeds. New sources of data will become available, and insights based on currently available data will need revision.

The nature of the test system and the constraints imposed by the availability of computing facilities during the early development of OCIPS have led to a prototype that has some major disadvantages when viewed from the aspect of an operational system. Therefore, to improve the efficiency and increase the capacity of the system, it would be necessary to restructure the dialogues and reprogram OCIPS. Ideally, the revised system should provide better features for dialogue-building and user-monitoring. For example, the dialogue-building language should have provisions for branching on a user's response to a question and on the value of data stored in the data base.

The final step in the creation of the evolved system involves evaluation of the various alternatives provided for an operational system (see below), and the procurement of such a system. This step would probably require a team of experts whose eventual product would be a technical report and an accompanying bid document on which to base procurement.

Such a team would evaluate the alternative system configurations, resolve several policy issues; create a detailed system design, which would be a translation from the test system to the operational system; and write the procurement specifications based on the detailed design. Ideally the technical report should include criteria for the evaluation of the bids which result. Table 4 presents the estimated costs for this phase of the action plan.

Table 4

Estimated Personnel Costs for Creation of the Evolved OCIPS

Activity	Personnel (time)	Cost
1. Modifications: theory and changing Army realities	1a. ARI professional (6 M/M)	$27,500
	b. Contractors (6 M/M)	32,500
2. Revision of dialogue and program: prototype of operational status	2a. ARI professional (1 M/Y)	55,000
	b. Contractors (3 M/Y)	195,000
3. Technical report and document	3. Army professional (6 M/M)	27,500
Total		$337,500

ESTIMATE OF COSTS: PROCUREMENT, INSTALLATION, AND OPERATION

Operational Requirements

To progress from the present state to a fully operational state, the experimental system should continue to evolve while preparations are being made for procurement of the operational system. It is possible (though perhaps premature) to identify the broad implementation alternatives and to assign preliminary costs to them. However, prior to discussing these alternatives it is desirable to establish the boundaries or assumptions of the system. These assumptions fall into three broad categories: the system topology or the relationship among systems resources and access points; the values of the important system parameters; and the general requirements. These assumptions form the constraints within which alternative implementation strategies can be developed. These assumptions are presented in a manner designed to facilitate their discussion and review. Changes in assumptions affect the relative desirabilities of the various implementation strategies. The following discussion highlights some of these effects.

System Topology. It is assumed that OCIPS can be run on a dedicated, general-purpose digital computer located at an Army base. The computer must be equipped with the normal complement of peripheral devices, i.e., card reader and punch, printer, tape, and disk drives. Access to the system should be via cathode ray tube (CRT) displays. Each display should have a standard ASCII typewriter keyboard and a display surface capable of displaying 30 or more 80-character lines. Terminals will be connected to the main computer through dial-up communications controller(s). It is also assumed that the computer has adequate capacity and that no capacity limitations will exist; i.e., there will be no limitation on the number of Direct Access Storage Devices (DASD) available, the number of CPU cycles available, or the number of communications controllers that can be connected to the system.

Given this unconstrained case, two questions must be addressed: (a) How many terminals are needed to provide reasonable accessibility to the target user population (i.e., lieutenants and captains)? and (b) Where should these terminals be located? It was concluded that maximum coverage of the target population could be achieved by placing two terminals at every Army Education Center, 40 terminals at MILPERCEN, and 20 terminals at the Development and Support site (Table 5, line 1). The total number of terminals required for this configuration is 1,260, or approximately 1 terminal for every 50 officers. It is clear that this number of terminals is larger than that needed for adequate coverage. Consideration of those periods in an officer's career when he or she was most likely to make use of the system led to a revised estimate. Times of high career interest are during initial specialty training, advanced specialty training, just prior to reassignment, and just prior to alternate specialty selection. On this basis it was decided that a larger proportion of the terminals should be allocated to the branch schools and a smaller proportion should be available at the Army Education Centers. This led to the recommended configuration consisting of 467 terminals (Table 5, line 2). In this configuration almost all of the terminals would be remote from the central computer, thus the topology implies considerable communication between the terminals and the main computer. Implied hereby is the need to consider trade-offs between the number of nodes (geographic locations that have terminals), the number of terminals at each node, the cost of

Table 5

Number and Location of OCIPS Terminals

Cases	Branch schools			Other Army ed. centers			MILPERCEN[a]	DEV & SPT	Total
	Number of schools	Units per school	Total units	Number of centers	Units per center	Total units	Number of units	Number of units	number of units
1. Even distribution	14	2	28	586	2	1,172	40	20	1,260
2. Recommended	14	3	42	400	1	400	20	5	467

[a]Includes ARI.

communication between the nodes and the main computer, and the extent to which the system is distributed (processing and data residing at the nodes).

System Parameters. Among the many specific requirements for OCIPS, the majority are functional requirements not relevant to the evaluation of alternative computer/communications configurations. Since the systems contain small (i.e., less than 10 million characters) data bases and require little computation in determining the next frame of a dialogue, almost any of the available, medium-size, interactive computers could accommodate a dedicated, reentrant system. Primary factors then are the amount of main and peripheral storage required and the response time of the system under peak load.

For the purpose of size estimates, the OCIPS application and control system programs are divided into four broad categories: dialogue modules, data bases, a monitor subsystem, and a control subsystem. The dialogue modules contain frame formats and the logic for analyzing the user's response to determine the next frame in the session. Data bases contain the statistics which describe particular subpopulations (e.g., Alternate Specialties). The monitor subsystem controls the sequencing of and the communication among modules. Also included are facilities for updating dialogues and data bases, gathering statistics, providing a generalized query capability and performing test and diagnostic functions. A privileged version of the system, for use during development, would contain dialogue and data base building facilities as well as utility programs. The control subsystem contains the portion of the manufacturer's supplied control system required to run the OCIPS application system, buffer areas and working storage. The size of this module depends on the particular computer system selected and the number of concurrently active users on the system.

The total amount of storage required for OCIPS is the sum of the amounts needed for the dialogue, data base, monitor, and control subsystems. Each dialogue module consists of a number of frames. The estimated average number of characters per frame is 1,280 (Table 6). The number of frames per application system is 1,344 (Table 7), or about 1.7 million characters of storage. The estimated storage required for the data base module is about 3.9 million characters per system (Table 8). Table 9 summarizes the estimated amount of storage per OCIPS, presented by category of storage (e.g., dialogue modules) and by storage type (e.g., RAM). A small amount of temporary storage is needed for data about the particular user while he or she is actively using OCIPS. These data have been termed local data and could be stored either within the terminal or in the main computer with an area for each active terminal. The required local data includes personnel data about the individual user (i.e., the officer's personnel record), frame responses, and summary data about previous sessions. The total estimated amount of storage per OCIPS is given by the expression

$$S_{TOTAL} = S_{DIALOGUE} + S_{DATA\ BASE} + S_{MONITOR} + S_{CONTROL} + \underline{n}\underline{l}$$

where: $\underline{n}$ = number of active terminals, and
$\underline{l}$ = amount of local storage per active terminal, and
S is in millions of characters.

Table 6

Average Number of Display Characters per OCIPS Dialogue Frame

Frame type	Lines per frame	Av. no. characters per line	Av. no. characters per frame	Probability	Weighted	Response per frame
Maximum	30	80	2,400	.20	480	1
Minimum	5	80	400	.20	80	1
Average	15	80	1,200	.60	720	11
Total				1.00	1,280	

19

Table 7

Number of Frames: OCIPS

Cases	Number of frames per dialogue module	Number of dialogue modules	Probability	Weighted	Safety factor	Total
Large	200	7	.2	280		
Small	80	7	.2	112		
Average	120	7	.6	504		
Total			1.0	896	1.5	1,344

Table 8

Estimated Data Base Size: OCIPS

Cases	Number of characters per data base	Number of data bases per system	Probability	Weighted	Safety factor	Total
Large	750,000	5	.2	750,000		
Small	350,000	5	.2	350,000		
Average	500,000	5	.6	1,500,000		
Total			1.0	2,600,000	1.5	3,900,000

or $S_{TOTAL} = 1.7 + 3.9 + 1.048 + 2.08 + 6.54$

$S_{TOTAL} = 15.27$ 15 MILLION CHARACTERS

Table 9

Estimated Amount of Storage for OCIPS

Category	Type storage[a] Random access memory (RAM)	Read only memory (ROM)	Direct access storage (DAS)	Total
Dialogue modules	--	.016	1.7	1.716
Data bases	--	--	3.9	3.9
Monitor subsystem[b,c]	.016	.032	1.0	1.048
Control subsystem[d]	.016	.064	2.0	2.08
			Subtotal	8.74
Local, per terminal[e]	.004	--	0.01	0.014
		Subtotal, 0.014 (467 terminals)		6.54
			Grand total	15.27

[a] In units 2^{20}, or approximately 1 million characters = 2.20.

[b] Includes the following modules: Monitor, Statistics, Update, Test.

[c] Development Systems include the following modules: Frame and Data Builder, Utilities, Query.

[d] Includes the following modules: Scheduler, Reader, Writer, Data Manager, Device Manager, Common Buffer, and Work Areas.

[e] Includes individual work areas.

The second major system parameter to be considered is response time. The system response time will be determined by the rate and type of messages arriving at the main computer (see Table 10). This in turn is dependent on the terminal usage patterns. Because of time zone differences, it is unlikely that more than half the terminals would be active at any time, or, at most, 234 active terminals. Assuming 300-baud communication lines, most of the medium-size computers in the dual processor DEC 20 or dual processor IBM 3031 class system would be able to handle this number of active terminals. A study of the amount of time required to process each message type (i.e., each frame response) should be made in order to obtain a better estimate of

the likely queue lengths and waiting times. For now, however, we can work with some reasonable estimates. Assuming an average arrival period of 130 ms (7.78 arrivals/sec) it should be possible to respond within 2 seconds 90% of the time. There are, of course, cost and performance trade-offs between random-access memory, read-only memory, and direct-access storage in configuring the computer system. In addition, the system topology--number and location of terminals--affects the amount of storage required, expected peak message traffic, and the communications costs.

Table 10

Average Response Time per Frame

Case	Characters per frame	AV response time per frame (SEC)	Probability	Weighted
Maximum	2,400	.8	.2	.16
Minimum	400	.3	.2	.06
Average	1,200	.5	.6	.30
			1.0	.52

General Requirements. After discussions with operational and planning personnel at MILPERCEN, the following general requirements were judged to be important for the operational system.

1. A 6- to 8-year operational life.
2. Procurement to begin 1 to 2 years hence.
3. A 1- to 2-year procurement cycle.
4. Commercial standards used where possible; most military specifications waived.
5. Data base(s) updated once per year.
6. Dialogue(s) updated once per year after the system has stabilized.

The first three items establish the time frame for procurement of system components. This time frame will permit more detailed study of the alternative technologies available for the system. Since the equipment will be used primarily within the continental United States and in office environments, it seems reasonable to use commercial-grade equipment, to keep costs to a minimum. The last two general requirements imply that the dialogues and data bases should be considered stable and not subject to frequent changes.

Implementation Alternatives

Based on the system topology, parameters, and general requirements discussed previously, there are four broad implementation alternatives.

1. Use all existing, dedicated UNIVAC 1108 installations to run OCIPS.

2. Configure a new, dedicated main computer system of the dual DEC 20 or dual IBM 3031 class.

3. Use the DEC 11/45 existing at Army bases.

4. Develop a self-contained, portable, microprocessor-based system.

There are numerous variants, but these approaches permit exploration of the implications of the major alternatives.

Discussion

As the experimental system was developed on a UNIVAC 1108 under EXEC 8 it is reasonable to investigate whether an operational system running on an 1108 could make any extensive use of the experimental software. The experimental system was written in FORTRAN with little consideration for machine efficiency or ease of maintenance. In an operational system with many users and larger data bases, performance and maintenance become much more important. In all likelihood, little of the experimental system can be used directly in the operational system and the system will have to be mostly redesigned as specified above. A dedicated 1108 computer probably has sufficient capacity to run an operational OCIPS depending on the amount of core memory available and the choice of communications controllers. Should an 1108 system be available at essentially no cost, this alternative should be investigated in more detail.

Configuring a new, dedicated, medium-size computer system of the dual DEC 20 or dual IBM 3031 class implies a computer facility cost in the $4 million to $5 million range, with about $600,000 allocated to displays and $400,000 for communications controllers. Unless an existing network can be used (either a data or a voice grade network) one would have to be constructed. Operational costs would be high because they will include communications costs as well as the cost of the main computer facility.

Using DEC 11/45 computers already installed at Army bases would have the advantage of allowing OCIPS to be designed for a common computer type and configuration. This alternative would greatly simplify maintenance and support requirements. Assuming that no additional hardware (e.g., Army storage or terminals) is required, total program costs could be greatly minimized. However, since OCIPS would require dedicated use of the 11/45, existing application systems already running would have to be rescheduled.

A self-contained, portable microprocessor-based system seems the most attractive alternative. Although it may have a higher development cost and more risk than the other approaches, it has a number of potential advantages. A portable unit could be located where the demand was greatest. The

self-contained nature of the system would not incur communication costs. A unit with a 5-inch CRT, ASCII keyboard, 16 bit microprocessor, 32K RAM, 128K ROM, and two floppy disk drives should be available in 2 years at about $3,000 to $5,000 per unit when ordered in quantity. Thus an operational system of 467 units might cost between $1.4 million and $2.3 million. Table 13 provides a more detailed discussion of this alternative.

The implementation alternatives have different cost implications (see Table 11). Using an existing UNIVAC 1108 installation or a standard DEC 11/45 computer has the lowest procurement costs since most of the equipment already exists. However, these alternatives have high operational costs. A new medium-size computer at each node would involve both high procurement and high operational costs. Finally, the self-contained microprocessor-based system has a relatively higher development cost and relatively lower procurement, installation, operation, and support costs. These alternatives represent trade-offs between procurement and operations costs and between development and procurement costs. Table 12 summarizes the advantages and disadvantages of each approach.

Other Costs

Regardless of the implementation strategy chosen, certain other costs of installation and maintenance can be predicted. The first such cost category deals with the manpower requirements for the installation of a working system at the nodes. Experience indicates that the use of such a system would be severely impaired without concentrated professional attention at the field sites. Installation would necessarily include orientation, training, and other preparation of the on-site personnel who would be principally responsible for the operation of OCIPS. In addition, training programs would be required periodically.

It is also possible to predict a continual evaluation of OCIPS, as specified elsewhere in this report. New data bases will be needed, dialogue units for other purposes will be desirable, periodic updating of the operational system will be essential. To accomplish these tasks, a team of three professional persons would be required, at an annual cost of $165,000.

Table 13 provides a summary of the total estimated costs for bringing OCIPS to an operational status.

DISSEMINATING CAREER INFORMATION WITHOUT THE COMPUTER

The previous sections have described methods for the continued development of OCIPS and costs associated with the implementation and support of a fully operational system that relies on the use of the computer. This section addresses a different issue: What are the costs and potential benefits of implementing a system that does not require the installation of a computer-based interactive system? The response to this question includes a brief discussion of current methods for disseminating career information employed by MILPERCEN and the description of an alternative for augmenting their current efforts.

Table 11

Relative Cost Comparison of Alternate OCIPS Implementation Strategies

Alternate strategies	Development[a]	Procurement[b]	Installation	Operation[c]	Maintenance training support
1. Existing 1108	A	0.5-1M[d]	B	.2xC	2xD
2. Configure 2x Dec 20/ 2x IBM 3031	A	$4-5M	3xB	20xC	5xD
3. Dec 11/45 at each node	A	0[e]	0[e]	C	2xD
4. Develop self-contained, microprocessor-based unit	2.0xA	$1.4-2.3M	0.1xB	0.1xC	D

Note. A = Cost to design and implement operation OCIPS software/hardware on 1108.

B = Cost to install additional communications and storage equipment at main site and in field.

C = Incremental variable 8 DL costs, including communications, to use base computer.

D = Cost to support self-contained unit.

[a]Includes design and development of operational OCIPS.

[b]Includes purchase of computer system, displays, and communication equipment on which operational OCIPS will run.

[c]Includes variable costs and direct labor costs (e.g., computer operations) to run operational OCIPS over system life.

[d]Assumes an existing, no-cost site. Existing work would have to be moved to another machine.

[e]Assumes no additional equipment required.

Table 12

Summary of OCIPS Implementation Alternatives:
Advantages and Disadvantages

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1. Use existing Univac 1108 installation

   Advantages
   - Lowest procurement cost; buy only terminals, communications, and storage devices
   - ARI staff familiarity with equipment

   Disadvantages
   - Relatively higher operations cost, especially for communications
   - Probable unavailability of machine
   - Little direct use of the experimental system
   - No longer price-performance competitive
   - Possible capacity problem

2. Configure new 2x Dec 20/2x IBM 3031 computer center

   Advantages
   - Proven and generally available systems
   - Central control facilitated

   Disadvantages
   - Relatively high procurement and operations cost

3. Use existing Dec 11/45 type mini computers at nodes

   Advantages
   - Dedicated computer for OCIPS; simplifies system design
   - Common system; simplifies maintenance and support
   - Low procurement costs

   Disadvantages
   - Displacement of other operating systems
   - Not as convenient as self-contained, microprocessor-based system

4. Develop self-contained, microprocessor-based unit

   Advantages
   - Least costly procurement, operation, and support
   - Most convenient for user
   - Less dependence on other units
   - Overseas use possible
   - Reduced amount of system storage, since any unit needs only one local storage area

   Disadvantages
   - Somewhat greater development cost
   - Some risk that needed technology will not be available

Table 13

Summary of Estimated Costs for Bringing OCIPS to Operational Status

One-time costs	
Evolution of prototype (see Table 3)	$416,430
Creation of evolved OCIPS (see Table 4)	337,500
Procurement (see Table 11)	--
Continuing costs	
Operation of OCIPS (see Table 11)	--
Installation and maintenance	165,000 per year

Current Methods

MILPERCEN uses several methods for disseminating career data and information. One method uses a wide array of Army publications. Some of these publications address themselves to the entire population of Army officers. For example, Commanders Call is published each month and mailed directly to each officer in the Army. Some 40 additional periodicals and newsletters are available to officers, many of which are targeted to specific populations or officers with special interests (e.g., Engineer, Infantry, Law Enforcement Journal, etc.). While none of these publications is designed for the purpose of providing career information, some do on occasion provide data relevant to officer career planning.

A second method involves regular field visits by career managers and other officials at MILPERCEN to a variety of training and educational centers (e.g., branch schools, Command and General Staff College, etc.) for the purpose of communicating relevant career information to officers. In addition to meeting with large groups of officers, MILPERCEN officials meet, upon request, with individual officers to discuss specific career plans. These field visits afford officers the opportunity both to keep informed about new developments in the Army career progression system and to discuss their own particular career plans with knowledgeable Army personnel.

A third method for disseminating career information is the preparation of special circulars or documents containing specific career data judged by MILPERCEN officials to be important to officer career planning. Typically these documents are sent directly to post commanders with instructions to make the information available to all officers under their command. For example, pertinent career information might be distributed to commanders through memoranda under the authority of the Office of the Chief of Staff.

A variety of career data and information is currently provided by MILPERCEN through these channels. Information on overaligned and underaligned specialties is routinely disseminated to officers. This information is particularly important to officers prior to their designation of

an alternate specialty. Promotion and selection data, by specialty, are published in the Army Times and also distributed regularly to post commanders. Recently MILPERCEN officials have begun to collect and disseminate information on the number of command positions available at specific points in time and the number of officers eligible for these positions.

To understand more fully current MILPERCEN operations, it is important to note four factors which influence both the means of disseminating career information and the types of career information disseminated. First, the need to disseminate specific career information can be expressed at a variety of levels within the MILPERCEN organizational hierarchy, and the level of expressed concern clearly determines how decisions on whether or not to disseminate the information are reached. Second, the type of career information and its perceived value to officers determines the means by which it will be disseminated: career information accorded top priority is disseminated through channels different from those used for information deemed less important. The third factor is the role of initiative of post commanders in the information-sharing process. Since career information is frequently transmitted through commanders, these officers represent a critical link between MILPERCEN and the larger population of Army officers. Finally, the fourth factor is the implicit assumption on the part of MILPERCEN officials that the most informed officers are those who actively solicit information. In other words, MILPERCEN officials believe that information about Army career progression exists and is available to all officers through a variety of sources. It is, therefore, primarily the responsibility of individual officers to know from which source the information can be obtained and to solicit it actively.

An Alternative for Augmenting Existing Methods

The alternative for augmenting current methods for disseminating career information described below is based on the following assumptions:

- A significant number of Army officers are not adequately informed about career progression, despite current efforts to provide them with relevant information (Macpherson et al., 1978).[1]
- Further development of OCIPS will result in the creation of various kinds of career information not currently available.
- Although it is, ultimately, the individual officer's responsibility to keep informed, modifications and additions to the current system can increase the amount of relevant career information and officers' access to it.

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[1]The data upon which this assumption is based were persuasive but are now out of date. MILPERCEN has accelerated its efforts to keep officers informed and made many successful efforts to improve the method for disseminating career information. Therefore, the alternative suggested here is intended as yet another way of further improving current methods.

- The alternative suggested here is viewed as an addition to, not as a substitution for, current methods employed by MILPERCEN.

The following description focuses first on the preparation of career data for dissemination and second on the means for dissemination. Estimates of associated costs are reported in Tables 14 and 15.

Career Data Files. The system design section of this report noted career data files likely to be included in a fully developed version of OCIPS (e.g., similarities and differences of assignments, career-enhancing values of various assignments). Table 3 provided an estimate of the costs of developing these data files. These costs would remain the same whether the data were disseminated to officers through an interactive computer-based system or by any other means. Table 14 provides an estimate of the costs involved in preparing the data and disseminating from one file. It does not include costs required for developing the data files themselves, and assumes that the information will not be disseminated by the computer-based system.

Table 14

Estimated[a] Personnel Costs for Preparing and Disseminating Career Information from One Data File

Activity	Personnel (time)	Cost
1. Creation of a format for the presentation of data	1. ARI professional (2M/M @ $4,584)	$ 9,168
2. Preparation of narrative to describe and interpret data	2a. ARI professional (3M/M @ $4,584)	13,752
	b. Consultant (10 M/D @ $150)	1,500
3. Final preparation and distribution to Education Centers	3. ARI professional (1M/M @ $4,584)	4,584
Total		$29,004

[a]Estimates derived from existing knowledge of data file for ALTERNATE SPECIALTY.

Since it is not now possible to determine with any certainty what data files will be developed in connection with OCIPS, the estimates in Table 14 were derived through an analysis of existing information about the ALTERNATE SPECIALTY data file. It was assumed that ALTERNATE SPECIALTY data are representative of data files that are likely to be created in connection with OCIPS.

Disseminating Career Information. After a data file has been prepared for distribution, the next step is to make it available to officers. Three alternatives were considered. The first was direct mailing to each officer. This alternative was judged to be highly inefficient because of the cost and because not all career information generated through OCIPS is useful for every officer at each stage in career development. For example, data on alternate specialty designation would be irrelevant to officers who already have their alternate specialty designations.

A second alternative was providing each post commander with the career information. This method is one currently used by MILPERCEN; however, the larger the number and scope of data files created in connection with OCIPS, the heavier the burden on each commander to make the information available to the post officers. As Table 14 indicates, the alternative judged to be the most realistic and to have the greatest likelihood of improving the effectiveness of career information dissemination involves the use of Army Education Centers. It is recommended that the career information documents prepared on the basis of current and future OCIPS data files be distributed to each of the Army's 586 Education Centers. These centers are in a position to collect, organize, and provide easy access to career information for every officer in the Army.

At present, Education Centers do not disseminate career information. Moreover, the majority of Centers are viewed by officers as primarily responsive to the needs of enlisted personnel. Consequently, several steps would be required to insure the successful implementation and on-going effectiveness of the method described above. Table 15 indicates these steps and estimates their related costs. First, it is suggested that ARI and MILPERCEN officials work directly with Education Center personnel in establishing a career resource library at each Center, with the purpose of collecting career information to be made available to officers. ARI and MILPERCEN officials would be primarily responsible for identifying existing career information and providing the Centers with additional resources as they are developed.

Since various career-relevant data become obsolete with time, a second step involves regularly updating career information to be made available to officers. For example, promotion opportunities change from year to year. To be informed accurately, officers must be kept abreast of these changes. Table 15 shows the estimated costs of updating one data file. This estimate was again derived from existing knowledge of the data file for ALTERNATE SPECIALTY and is intended as an example of costs required for updating any data file developed in connection with OCIPS.

Finally, officers must be aware of what information is available and where it can be obtained. To accomplish this objective, it is recommended that Education Centers distribute a monthly newsletter indicating the type of career information collected by and available at the career resource libraries.

Benefits. The implementation of this alternative method for disseminating career information would result in the following benefits:

- Increased amount of career information available to each officer.
- Various types of career information available from the same source.
- Easy access to important career information for every Army officer.
- Significantly lower costs than costs would be if the career information were disseminated through the computer-based system.

Table 15

Estimated Personnel Costs for Implementing and Maintaining Method for Disseminating Career Information

Activity	Personnel (time)	Cost
1. Consultation with Education Centers in establishing career resource libraries	1a. ARI professional (6M/M @ $4,584)	$27,504
	b. MILPERCEN (3M/M @ $4,584)	13,752
2. Updating one career information data file	2. ARI professional (1M/M @ $4,584)	4,584
3. Preparation of monthly newsletter	3. Education Centers (3M/M @ $4,584)	13,752
Total		$59,592

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